

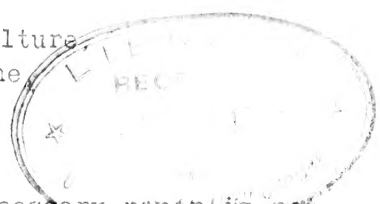
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A STAND FOR THE PHOTOGRAPHIC REPRODUCTION OF PRINTED PAGES 1/

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The research worker often finds that a certain necessary paper is not available in the field library, that it is too expensive to buy a volume of some journal in order to obtain the single article, or that the volume is too large and cumbersome for easy use of the article when it is received. Under such conditions the method of reproducing such articles photographically offers a cheap solution. The miniature camera, such as the Leica, with its many accessories and its use of cheap motion picture film, offers the research worker the opportunity of easily assembling a complete workable bibliography.

It has often been found that when desk lamps or similar lights were used in photographing printed pages the high lights were excessive, particularly when the surface to be photographed had a glossy finish, as in the better grades of journal paper or in illustrations. After considerable experimenting with desk lamps and similar light sources, the apparatus shown in the accompanying illustration (fig. 1) was evolved for use with the Leica camera.

The light source, made of light wood and "Masonite Fressedwood," uses four 60-watt frosted bulbs. The inside of the apparatus is painted with aluminum paint as a reflecting surface and the light is reflected through oblique screens of "Traceolene." While it is probable that opal glass would give better diffusion of light than the "Traceolene," no difficulty has been experienced with the present arrangement. The camera, together with the sliding ground-glass focussing arrangement (FULDY), is mounted on the top of the apparatus, and the camera lens projects between the two tracing-paper screens. The whole apparatus is movable up and down in wooden ways attached to the wall. This apparatus gives no appreciable high lights or shadows over the surfaces up to 2 by 3 feet. On areas of 2 by 3 inches or less, where the camera must be very close to the object, a center shadow is evident. It will be found that under ordinary conditions the Elmar 50 millimeter, f 3.5 lens will have to be used sliding free in its mount for focussing.

At this station (Southern States Bee Culture Field Laboratory) positive motion picture film is used for all copy work. This is about half as fast as ordinary negative film but gives better contrast. With the aperture set at

1/ Details of the device described in this number of the ET series refer to a specific make of camera. The general idea, and at least some of the details, seem, however, to be suitable to other kinds of cameras. Trade names of certain standardized articles are used to express briefly standards of materials suitable for the construction of the device. This use of these trade names is not to be construed as an endorsement of these products.

f 6.3 an exposure of one second is given. Ordinarily, timing is by count, a slow count of "one thous--and" being equivalent to one second.

With thin paper, such as is used in ordinary bulletins, the type shows through, giving a blurred background. In such cases, and as a precautionary measure in practically all cases, a sheet of flat black paper is placed beneath the paper to be photographed. With old papers where the print is browned, a backing paper of the same color as the print should be used.

With the camera set at f 6.3 the depth of focus is great enough to take care of any ordinary curvature of the page. However, in such cases, even though the print may be perfectly legible, the lines will appear curved. Weighted sticks along the top and bottom margins of the books to be photographed produce high lights from reflection. Similar high lights may be produced from reflections from painted walls.

The developer used with positive film when used for negatives is particularly important. The Eastman D-11 formula given below has given exceptionally fine contrasty results.

D-11 Fine Grain Process Developer for Positive Film

Water (about 125° F.)	225.0 cc
Elon	0.9 gram
Sodium sulfite	70.0 grams
Hydroquinone	8.5 grams
Sodium carbonate	23.5 grams
Potassium bromide	4.5 grams
Cold water to make	450.0 cc
Develop 4 to 6 minutes at 65° F.	

Kodaline Bromide, a thin and contrasty paper, is used as a printing paper. Since the papers are filed in envelopes in a 5 by 8 inch bibliography file, sheets $6\frac{1}{2}$ by $8\frac{1}{2}$ inches are cut to $4\frac{1}{4}$ by $6\frac{1}{2}$ inches, which will accommodate the printed page of ordinary books and bulletins with only slight reduction. Eastman P. M. C. #1 contrast, single weight, has also been used but is thicker and more bulky than the Kodaline Bromide.

Eastman D-72 print developer has been used satisfactorily with some modification for this work.

Eastman D-72 Developer

Water	500.0 cc
Elon	3.1 grams
Sodium sulfite	45.0 grams
Hydroquinone	12.2 grams
Sodium carbonate	67.5 grams
Potassium bromide	1.9 grams
Water to make	1000.0 cc

For use with P. M. C. or Kodaline Bromide, development is accomplished with sufficient contrast with the following formula:

Eastman D-72 stock	50 cc
Water	200 cc
Potassium bromide	1 gram
Develop for $1\frac{1}{2}$ minutes	

Figure 1. - Diagram showing views and section of the reproduction stand. No dimensions are given, since the size may be varied to suit the type of work. The apparatus shown is 30 inches long, 15 inches wide, and 8 inches long over all and lights an area of 24 by 34 inches.

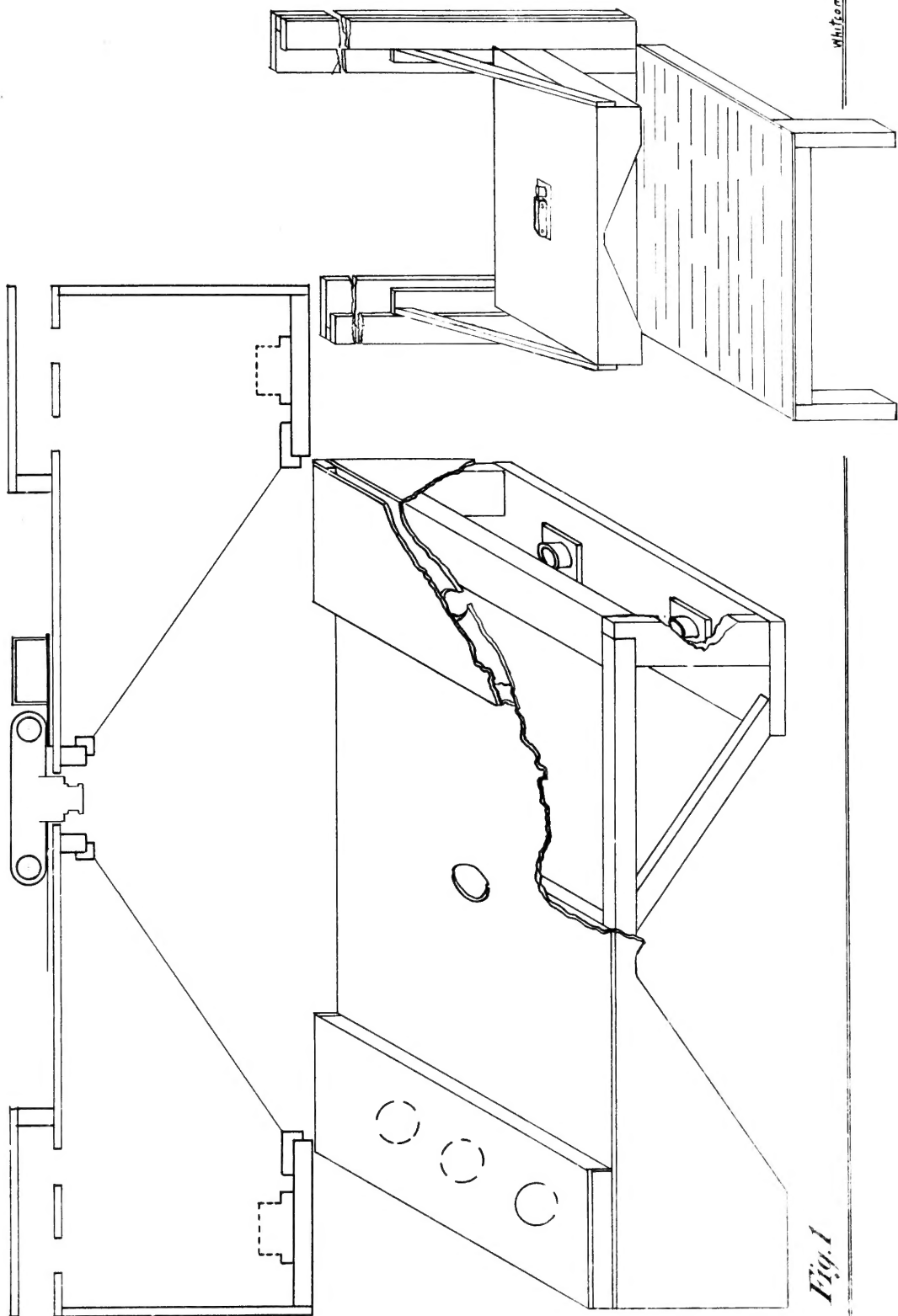


Fig. 1

